
Knowledge of Physics Subject Teachers Toward Pedagogical Aspects in Public High Schools in Lhokseumawe City

Syarifah Rita Zahara¹, Muliani², Wilda Rahmina³, Siska Mauritha⁴

^{1,2,3} Department of Engineering, Universitas Malikussaleh, Lhokseumawe 24352, Indonesia

⁴ Senior High School, Pidie, Kota Sigli 24112, Indonesia

Coressponding Author. E-mail:

¹syarifah.rita@unimal.ac.id

²muliani91@unimal.ac.id

³rahminawilda@gmail.com

⁴msieskha@gmail.com

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Abstract

In the education quality survey issued by the PISA (Program for International Student Assessment), Indonesia is ranked 72nd out of 77 countries. The Teacher Competency Test (UKG) results in Indonesia are still low and still far from being targeted by the government, especially in Aceh province Aceh at the national level is still heartbreaking by being the second lowest in Indonesia. Seeing the problems faced by education in Indonesia, to improve the quality of education, the quality of teachers must be improved first, one of which is by increasing the pedagogical competence of teachers. This study aims to know the pedagogical knowledge of physics teachers in SMA Negeri Lhokseumawe which includes aspects of learning planning, aspects of learning methods and aspects of learning evaluation. The research was conducted in the form of a survey with the population of this study was to take the entire physics subject teachers at SMA Negeri Lhokseumawe, totaling 7 (seven) schools with 28 physics teachers. The samples in this study were 3 schools that were taken by simple random sampling, namely 8 physics teachers at SMA Negeri 2 Lhokseumawe, 3 physics teachers at SMA Negeri 5 Lhokseumawe, and SMA Negeri 7 Lhokseumawe with 2 physics teachers. The results showed that the physics teacher's knowledge on the learning planning aspect was in the category of having good knowledge, meanwhile the physics teacher's knowledge on the learning method aspect already had a fairly good knowledge, while the physics teacher's knowledge on the learning evaluation aspect also had fairly good knowledge. So it can be concluded that physics teachers in the pedagogical aspect are in a fairly good category, meaning that most physics teachers already have a pretty good knowledge of pedagogical aspects.

Keywords: Teacher Knowledge; Pedagogic Aspects.

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INTRODUCTION

In the education quality survey issued by PISA (Program for International Student Assessment), Indonesia was ranked 72nd out of 77 countries. Based on the results of this data, Indonesia was ranked 6th in the bottom. Observers assess the low teacher competence and the education system that is too old to be the cause (Masfufah & Afriansyah, 2021). The results of the teacher competency test in Indonesia are still low and far from being targeted by the government, especially in Aceh province, the results of the 2018 teacher competency test showed that 75% of teacher competency tests were considered below average. Of the 34 provinces in Indonesia, only 10 provinces scored above the average and the rest still scored below average. The peak of the highest score was led by DI Yogyakarta with an average score of 67.02. Then in the second position, the province is Central Java with an average value of 63.30. And in the third position is DKI Jakarta province with an average value of 62.58. Aceh is ranked 32 out of 34 provinces in Indonesia. The UKG Aceh results for the national level are still low, ranking second lowest in Indonesia Mastery (Steemit, 2018).

Teachers' knowledge in physics subjects in the pedagogical aspect of public high schools in Lhokseumawe City was obtained from information based on the results of the national level teacher competency test (UKG) which means that with the implementation of UKG at the national level for teachers who have been certified and have not been certified there are still many physics teachers in Aceh. which are less competitive with the results of competency tests with other provinces. This is indicated by the low teacher competency test in answering questions so that they get a moderate score. As for the aspects regarding the competencies that a professional teacher must have, according to the Regulation of the Minister of National Education of the Republic of Indonesia Number 16 of 2007 states About Academic Qualification Standards and Teacher Competencies, there are four competencies that must be possessed by teachers which include pedagogical aspects, professional aspects, personality aspects and social aspects (Wulandari & Mundilarto, 2016).

There are several pedagogical aspects that still need to be considered and improved, from the conclusion of the research analysis the

results of the pedagogical aspects are still below the average in the category. very insufficient and sufficient, meaning that most teachers still do not understand knowledge about pedagogical aspects (Habibullah, 2012; Pujiastuti et al., 2012; Yurizki et al., 2018). Then the research conducted by Suhandani & Julia, (2014) states that the average pedagogic ability of certified educator teachers in Sumedang district is in the category sufficient and good based on the number of answers from the respondents. Meanwhile, research conducted by Kurniawati, (2013) states that there are pedagogical aspects that still need to be improved, because based on the results of the analysis, the pedagogical competence of teachers is still below the level average.

The differences between current research and previous research are: 1) this research is a study of the pedagogical aspects of teachers towards teacher knowledge in three pedagogical aspects, namely the pedagogical aspects of learning planning, the pedagogical aspects of learning methods and the pedagogic aspects of learning evaluation. 2) research by Wulandari & Mundilarto, (2016) which is measured is not pedagogical competence, but professional competence, in which the research subjects are both teachers. 3) research by Suhandani & Julia, (2014). The measured competence is the same as the research the author will do, but this research is more focused on the results of teachers as professional educational personnel. 4) research by Anik Kurniawati The competence measured is the same as the research that the author will do, but this research also discusses and measures the professional competence of teachers while the author only measures the pedagogic aspects of the teacher.

METHOD

This research is a quantitative descriptive approach, quantitative approach it is required to use numbers starting from data collection, interpreting data and displaying data (Maryanti et al., 2019; Masniwati, 2018; Walid et al., 2019; Widianawati, 2011). So in this study using a quantitative approach to a number of questions and then the score will be calculated from each question given to the physics teacher in the form of multiple choices. While the type of research, as Hasan stated, this descriptive method is used to systematically describe the facts or characteristics of a particular population or

particular field, in this case the actual and accurate field.

The population in this study were all physics teachers in SMA Negeri Lhokseumawe. The number of SMA in Lhokseumawe City is 7 (seven) schools with 28 physics teachers. The samples in this study were 3 schools that were taken by simple random sampling, namely 8 physics teachers at SMA Negeri 2 Lhokseumawe, 3 physics teachers at SMA Negeri 5 Lhokseumawe, and SMA Negeri 7 Lhokseumawe with 2 physics teachers. So the total sample size is 13 physics teachers. Data is obtained through a multiple choice test instrument, documentation and interviews.

RESULTS AND DISCUSSION

In this study the data were collected through a question test instrument. The writer gave a test to physics teachers in the form of multiple choice which was distributed to 13 physics teachers at Public Senior High School Lhokseumawe. To assess the physics teacher's knowledge on the pedagogical aspect was obtained from the question sheets which the author distributed directly to each teacher. The question sheet contains 30 questions in the form of multiple choice with 10 questions regarding the pedagogic aspects of learning planning, 10 questions regarding the pedagogical aspects of learning methods and 10 questions regarding the pedagogic aspects of learning evaluation.

Then to get the score for each question of the physics teacher's knowledge on the pedagogical aspect, it is solved by using the formula to calculate the score. Based on the results of the distribution of test questions, the scores obtained from the knowledge of physics subject teachers on the pedagogical aspects of SMA Negeri Kota Lhokseumawe can be seen in the table 1:

Table 1. Scores of Physics Subject Teachers on Pedagogic Aspects

Respondents	Score Pedagogic Aspects		
	Learning Planning	Learning Methods	Learning Evaluation
1	90	70	60
2	90	60	60
3	80	60	60
4	80	60	60
5	80	60	60
6	80	60	60
7	80	60	60
8	80	60	60
9	80	60	60
10	80	60	60
11	90	50	50
12	60	70	60
13	60	50	60
Jumlah	1030	780	710
Rata-rata	79,2	60	54,6

(Source: Primary Data, 2020)

Based on the data in table 2, Teacher's Knowledge of Physics Subjects on Pedagogical Aspects which consists of lesson planning, learning methods and learning evaluation. For more details, the scores for the knowledge of physics subject teachers on the pedagogical aspects can be seen in the following diagram:

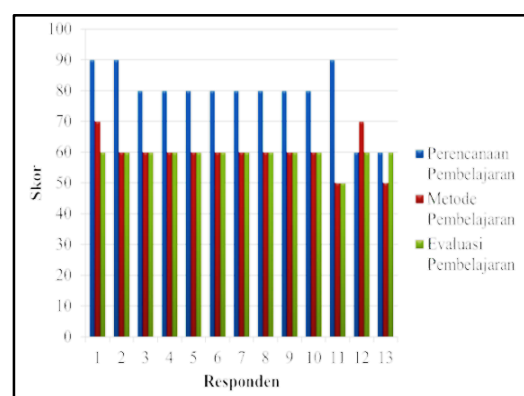


Figure 1. Score graph for physics subject teachers on pedagogic aspects

Source: Primary Data (processed) 2020

So that the data is processed with the frequency distribution formula as in table 2

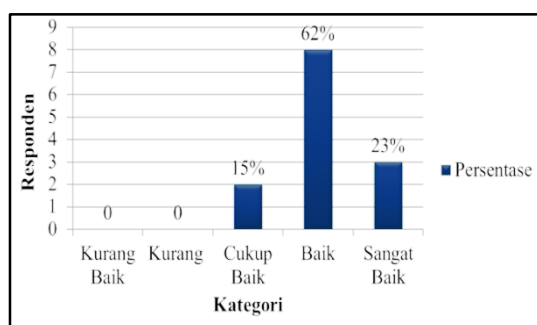
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Table 2. List of Learning Planning Scores on Pedagogic Aspects

Category	Score	Number of Physics Teachers	Percentage
Very good	85-100	3	23%
Good	70-84	8	62%
Pretty good	60-69	2	15%
Less	50-59	0	0
Not good	0-49	0	0
Total		13	100%

Source: Primary Data (processed) 2020

Based on table 2, it shows that the planning aspects of the physics teacher's knowledge score in this aspect are as many as 23% of the physics teachers are in the very good category, most 62% of the physics teachers are in the good category because the knowledge of physics teachers in the aspects of learning planning already has a lot of knowledge. which is good about this aspect, 15% are in the quite good or moderate category because the physics teacher's knowledge on this aspect is still classified as not fully understanding the aspects of learning planning. So based on the information above, some physics teachers already have good knowledge of the pedagogical aspects of learning planning. For more details, the list of scores of physics teacher knowledge on the aspects of learning planning can be seen in the following diagram:


Figure 2. Graph of Learning Planning Score List on Pedagogic Aspects

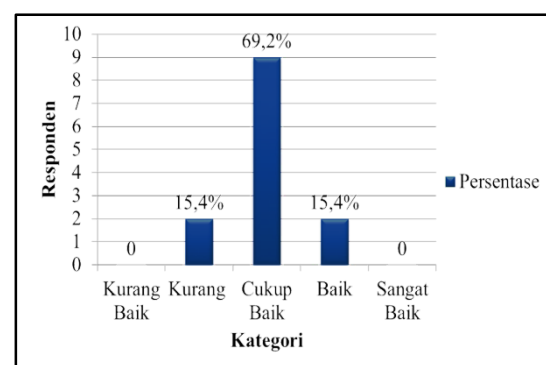
Source: Primary Data (processed) 2020

Table 3. List of Learning Method Scores on Pedagogic Aspects

Category	Score	Number of Physics Teachers	Percentage
Very good	85-100	0	0
Good	70-84	2	15,4%
Pretty good	60-69	9	69,2%
Less	50-59	2	15,4%
Not good	0-49	0	0
Total		13	100%

Source: Primary Data (processed) 2020

Based on table 3, it shows that in the learning method aspect the physics teacher knowledge score in this aspect is 15.4% of the physics teachers are in the good category, most of the 69.2% physics teachers are in the good enough category because the physics teacher's knowledge in this aspect is still good. classified as not fully understanding the aspects of the learning method, 15.4% are in the poor category, meaning that the knowledge of physics teachers in the pedagogical aspect is still low. So that based on the information above, some physics teachers already have a fairly good knowledge of the pedagogical aspects of learning methods. For more details, the list of scores of physics teacher knowledge on aspects of the learning method can be seen in the following diagram:


Figure 3. Graph of Learning Method Score List on Pedagogic Aspects

Source: Primary Data (processed) 2020

Table 4. List of Learning Evaluation Scores on Pedagogic Aspects

Category	Score	Number of Physics Teachers	Percentage
Very good	85-100	0	0
Good	70-84	0	0
Pretty good	60-69	12	92,3%
Less	50-59	1	7,7%
Not good	0-49	0	0
Total		13	100%

Source: Primary Data (processed) 2020

Based on table 4, it shows that in the evaluation aspect of learning physics teacher knowledge scores in this aspect as much as 92.3% of physics teachers are in the quite good category because the physics teacher's knowledge in this aspect is still classified as not fully understanding the aspect of learning evaluation, while 7.7% are in the less category this means that the knowledge of physics teachers in the pedagogical aspect is still low. So that based on the information above, some physics teachers already have a fairly good knowledge of the pedagogical aspects of learning evaluation. For more details, the list of scores of physics teacher knowledge on the aspect of learning evaluation can be seen in the following diagram:

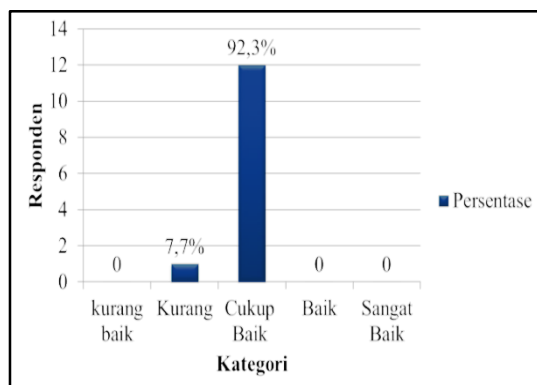


Figure 4. Graph of Learning Method Score List on Pedagogic Aspects

Sumber: Data Primer (diolah) 2020

Table 5. Knowledge Scores of Physics Subject Teachers in Pedagogic Aspects

Respondents	Score Pedagogic Aspects
1	73
2	70
3	67
4	67
5	67
6	67
7	67
8	67
9	67
10	67
11	63
12	63
13	57
Total	862
Avarage	66,3

Source: Primary Data (processed) 2020

Based on the score in table 5, the knowledge of physics teachers on the pedagogical aspects obtained from the research of 13 physics teachers, it is known that the highest score is 73 and the lowest score is 57. For more details, the scores for the knowledge of physics subject teachers on the pedagogical aspects can be seen in figure 5:

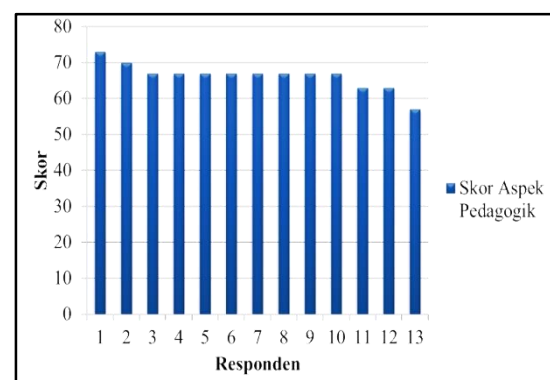


Figure 5. Graph of the Knowledge Score of Physics Subject Teachers in the Pedagogic Aspect

Source: Primary Data (processed) 2020

So to find out the percentage of physics subject teacher knowledge on pedagogical aspects by combining the three pedagogical aspects, namely learning planning, learning methods and learning evaluation are as follows:

Table 6. List of Scores for Physics Subject Teachers in Pedagogic Aspects

Category	Score	Number of Physics Teachers	Percentage
Very good	85-100	-	-
Good	70-84	2	15%
Prettygood	60-69	10	77%
Less	50-59	1	8%
Not good	0-49	-	-
Total		13	100%

Source: Primary Data (processed) 2020

Based on the table 6, it shows that the knowledge of physics subject teachers in the pedagogical aspect is divided into three pedagogical aspects, namely learning planning, learning methods and learning evaluation, it is known that 15% of physics teachers are in the good category, mostly 77% of physics teachers are in the sufficient category. good or moderate because the knowledge of physics teachers is still classified as not fully understanding the pedagogical aspects, 8% are in the poor category, meaning that the knowledge of physics teachers in understanding the pedagogic aspects is still low. So based on the information above, it can be concluded that most of the physics subject teachers already have a fairly good knowledge of pedagogical aspects. For more details, the list of scores for the knowledge of physics subject teachers on the pedagogical aspect can be seen in the following diagram:

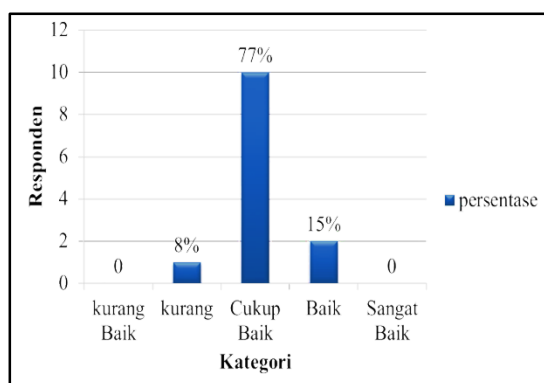


Figure 6. Graph of Knowledge Score List for Physics Subject Teachers in Pedagogic Aspects

Source: Primary Data (processed) 2020

So based on the information above, the results of research have shown that there are physics teachers who already have good knowledge of the pedagogic aspects of learning planning, the pedagogical aspects of learning methods and the pedagogic aspects of learning evaluation, this cannot be separated from the physics teachers themselves who come from from the LPTK (Teaching Level Education Institution) and they have been participating in trainings on pedagogical aspects such as MGMP training (Subject Teacher Conference), KTSP (Education Unit Level Curriculum), PLPG (Teacher Professional Education and Training) and they have also been certified. Then based on the results of the research and the information above shows that there are physics teachers who have poor pedagogical knowledge, this is also inseparable from the physics teachers themselves who do not understand the ability to make learning designs, the ability to carry out learning, the ability to evaluate the results. learning and lack of training to develop themselves for knowledge about pedagogical aspects. To be able to increase knowledge and skills about the competency of the pedagogical aspects of teachers, it is required to read a lot of relevant books, discuss with colleagues in KKG or MGMP activities, attend seminars, workshops, and education and training (Andini & Supardi, 2018; Kusumawati et al., n.d.; Lazwardi, 2016; Martahayu & Arsisari, 2020; Murtadho, 2015; Muslimin, 2020; Pramesti & Muhyadi, 2018; Supriyono, 2017; Susanto, 2012; Tyagita & Iriani, 2018).

CONCLUSION

Based on the results of research on the knowledge of physics subject teachers on pedagogical aspects in SMA Negeri Lhokseumawe, it can be concluded that physics subject teachers in the pedagogical aspect are in a fairly good category, meaning that most physics teachers already have good knowledge. pretty good regarding the pedagogic aspects. So that information is obtained that the pedagogical knowledge of physics teachers in the aspect of learning evaluation is in a fairly good category.

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